CLAIM

1. A switching network comprising:
   a) a first stage of switches having input lines and output lines and comprising m (n x k) switches, wherein m is an integer number, n is an integer number representing the number of input lines and k is an integer number representing the number of output lines
   b) a second stage of switches comprising of m (k' x k') switches, k' is an integer number representing the number of inputs and outputs
   c) a third stage of switches comprising of m (k x n) switches

wherein k' is selected such that $m*Q(k'/m) \geq k$ (where Q(x/y) denotes the quotient of dividing x by y) to allow using m switches in the second stage.

2. A switching network comprising:
   m identical modules, said module further comprising
   a) an input stage comprising of a (n x k) switch wherein n is an integer number representing the number of input lines and k is an integer number representing the number of output lines
   b) a middle stage comprising of a (k' x k') switch, k' is an integer number representing the number of inputs and outputs
   c) an output stage comprising of a (k x n) switch

   wherein k, k', and m satisfy $m*Q(k'/m) \geq k$

3. A method of constructing a switching network comprising:
   a) using m identical modules,
   b) constructing said module from an input stage comprising of a (n x k) switch, a middle stage comprising of a (k' x k') switch, an output stage comprising of a (k x n) switch
   c) selecting k' such that $m*Q(k'/m) \geq k$

4. A module comprising:

a) an input stage comprising of a (n x k) switch, switch wherein n is an integer number representing the number of input lines and k is an integer number representing the number of output lines

b) a middle stage comprising of a (k' x k') switch, k' is an integer number representing the number of inputs and outputs

c) an output stage comprising of a (k x n) switch

wherein a switching network can be constructed using m of said modules, where k, k', and m satisfy $m*Q(k'/m) \geq k$

5. A method of constructing a v(k, n, m) switching network for values of m belonging to a non-empty set $\mathcal{M}$ comprising:

a) using m identical modules,

b) constructing said module from an input stage comprising of a (n x k) switch, a middle stage comprising of a (k' x k') switch, an output stage comprising of a (k x n) switch

c) selecting k' such that $m*Q(k'/m) \geq k$ for all values of m belonging to set $\mathcal{M}$